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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/772,323	02/06/2004	Katsuji Satomi	L8462.04105	4519
24257	7590	09/01/2005		
STEVENS DAVIS MILLER & MOSHER, LLP 1615 L STREET, NW SUITE 850 WASHINGTON, DC 20036			EXAMINER WENDLER, ERIC J	
			ART UNIT	PAPER NUMBER
			2824	

DATE MAILED: 09/01/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

AK

Office Action Summary	Application No.	Applicant(s)	
	10772,323	SATOMI ET AL.	
	Examiner	Art Unit	
	Eric Wendler	2824	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
 - If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
 - If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
 - Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 8/29/05.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-13 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 2-6 and 8-10 is/are allowed.
- 6) ☒ Claim(s) 11-13 is/are rejected.
- 7) ☒ Claim(s) 1 and 7 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 2/6/2004 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|-----------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>2/6/2004</u> . | 6) <input checked="" type="checkbox"/> Other: <u>Search History</u> . |

DETAILED ACTION

Priority

1. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Drawings

2. Figures 9 and 10 should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g). Corrected drawings in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Specification

3. Applicant is reminded of the proper language and format for an abstract of the disclosure. The form and legal phraseology often used in patent claims should be avoided. The abstract should describe the disclosure sufficiently to assist readers in deciding whether there is a need for consulting the full patent text for details.
4. The abstract of the disclosure is objected to because it contains the term "comprises", which is considered to be legal phraseology. Correction is required. See MPEP § 608.01(b).

Claim Objections

5. Claims 1, 7, and 11 are objected to because of the following informalities: these claims refer to a "drive transistor." However, in the specification, two drive transistors are mentioned: a p-channel transistor (11) and an n-channel transistor (12). In these claims, it is unclear which drive transistor is being referred to. Examiner suggests applicant modify claims to make it clear which drive transistors are claimed. Appropriate correction is required.

Claim Rejections - 35 USC § 102

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

7. **Claim 11 is rejected under 35 U.S.C. 102(b) as being anticipated by the US Patent to Nakayama (5,371,705).**

With regards to claim 11, Nakayama teaches a word line drive circuit including a drive transistor, which drives a word line. Embodiments of a word line drive circuit are found in Figure 15, including transistors 260 and 802; column 15, lines 44-58; Figure 17, drive circuit 300, including drive transistors 310 and 312; and column 18, lines 35-39. Nakayama further teaches the use of a circuit to turn a drive transistor off in Figure 12, referring to inverter circuit 1 and transistor 2; column 11, lines 12-27. Nakayama also teaches various embodiments of voltage increasing circuits and switch circuits. Embodiments include Figure 24, 910; column 25, lines 58-68, column 26, lines 1-6;

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Figure 26, 904, 918, 922; column 25, lines 1-56; Figure 28, 905, 933, 936; column 29, lines 28-55. Figure 23 shows how these circuits are connected together to drive a word line, turn transistors on and off, increase voltage, and supply higher voltage to a word line.

Claim Rejections - 35 USC § 103

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

9. **Claims 12-13 are rejected under 35 U.S.C. 103(a) as being unpatentable over the US Patent to Nakayama et al. (5,371,705) in view of the US Patent to Hidaka (6,816,418).**

With regards to claim 12, Nakayama teaches all the claimed elements as mentioned above except the inclusion of a level conversion circuit which changes a signal to a voltage higher than the supply voltage. Hidaka teaches a switch circuit (Figure 19, 32; column 22, lines 13-67, column 23, lines 1-8) that includes a level conversion circuit (Figure 21, 32b; column 23, lines 36-67) which changes a signal to a voltage higher than the supply voltage. It would have been obvious to one of ordinary skill in the art, at the time of the invention, to insert the switch circuit 32 and level conversion circuit 32b of Hidaka into the system described by Nakayama in order to achieve a higher potential obtained on the word line.

With regards to claim 13, Nakayama and Hidaka teach all the claimed elements as mentioned above except that the switch circuit responds to the signal only when writing. Nakayama further teaches, in Figure 23, 902, and column 24, lines 52-58, that the X and Z level shift circuits 904, 905 containing the switch circuits previously referred to are connected to the output of the write voltage generating circuit 902, and responding to the signal only in writing. It would have been obvious to one of ordinary skill in the art, at the time of the invention, to apply the teaching of Nakayama to the teaching of Hidaka, and implement the switch and level conversion circuits of Hidaka to respond to the signal only in writing in order to prevent data corruption in reading.

Further motive to perform the above stated modifications in claims 12 and 13 are evidenced by the fact that both Nakayama and Hidaka are from the same field of endeavor as they both are trying to raise and lower voltages in semiconductor memory devices in order to improve reliability.

Allowable Subject Matter

10. Claims 2-6, 8-10 are allowed.

The following is an examiner's statement of reasons for allowance: with regards to claim 2-6, 8-10, while the use of a word line drive circuit including a drive transistor, and circuits to turn the transistor ON and OFF and increase the voltage after the transistor is turned OFF is well known in the art, there is no suggestion or teaching in the prior art to use these components with capacitors coupled between a word line and a capacitor drive circuit that switches from low to high when the drive transistor is off.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

11. **Claim 1 would be allowable if rewritten or amended** to overcome the objection(s) set forth in this Office action.

12. **Claim 7 would be allowable if rewritten or amended** to overcome the objection(s) set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.

Conclusion

13. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure: Chishiki (5,361,237), Javanifard et al. (5,978,263), Futatsuya et al. (5,999,475), and Lee (6,813,216). Chishiki teaches word line driving circuits in a semiconductor memory device having their voltage raised by a boost circuit. Javanifard teaches the use of switching circuits and transistors to modify the voltage through word lines in a nonvolatile memory. Futatsuya teaches a potential generation circuit that uses voltage boost or drive circuits to input to a switching circuit, before outputting a number of high voltages. Lee teaches the use of a pull-up circuit to increase the voltage of a word line drive circuit in a semiconductor memory device.

When responding to this office action, applicants are advised to provide the examiner with the line numbers and page numbers in the application and/or references cited to assist the examiner in locating the appropriate paragraphs.

14. A shortened statutory period for response to this action is set to expire three months and zero days from the date of this letter. Failure to respond within the period for response will cause this application to become abandoned (see MPEP 710.02 (b)).

15. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Eric Wendler whose telephone number is (571) 272-5063. The examiner can normally be reached on Monday - Friday 8AM - 4:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Richard Elms can be reached on (571) 272-1869. The fax phone number for the organization where this application or proceeding is assigned is (571) 273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

EJW
8/29/05

A handwritten signature in black ink, appearing to read 'Richard Elms' with a stylized flourish at the end.

RICHARD ELMS
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2800